



Trinity College Dublin

Coláiste na Tríonóide, Baile Átha Cliath

The University of Dublin

Job Description

Reference ID:	TCDCS_RF02
Job Title:	Full-stack developer
School/Department:	ADAPT SFI Centre, School of Computer Science and Statistics
Principal Investigator:	Prof Vincent Wade
Duration:	1 year, starting Jan 2024 (can be flexible)
Salary	Gross Salary starts at Research Fellow pay scale. Annual increments apply on IUA Pay Scale.

The Wider Research Project

The Full-stack developer is required to contribute to a new commercialisation project called Amethystcare led by Prof. Vincent Wade. The project is focused on the research and development of an Generative AI (LLM based) Conversational Agent capable of providing interactions and a level of companionship for older people living at home. The user interactions will include conversational engagement with older people regarding medicine adherence, loneliness and depression detection and cognitive decline & progress tracking. In addition to the voice assistant anonymised data will be collected and provided in a data dashboard to provide insights to clinicians.

The Full-stack developer will be responsible for the technology stack required to deliver this innovation, including backend infrastructure, data management, APIs and front-end development. This will involve working with a cross functional team of AI researchers, clinicians/nurses and designers requiring consideration of immediate and longer term goals of the innovation and implementing the required technical and architectural runway for each stage of development. Working in iterations and within an Agile framework to ensure continuous delivery of improvements and features.

Context

The position will be based in the ADAPT SFI Research Centre, hosted in the School of Computer Science & Statistics, Trinity College Dublin. ADAPT is the world-leading SFI Research Centre for AI-Driven Digital Content Technology, and brings leading academics, researchers and industry partners together to deliver excellent science, engage the public, develop novel solutions for business across all sectors and enhance Ireland's international reputation. The ADAPT Centre is hosted and coordinated in the School of Computer Science and Statistics, TCD.

The School of Computer Science and Statistics is ranked #1 in Ireland (QS Rankings) and is a proud recipient of a Bronze Athena Swan award, attained in 2021. As part of the School's on-going actions in relation to equality, diversity and inclusion it welcomes all applications that meet the criteria below and particularly those from under-represented groups. The School offers a collegiate and supportive environment to all its staff and works to ensure that all its staff and students can perform at their best while putting in those steps that facilitate a healthy work/life balance

Main Responsibilities

As part of the overall project, this Full Stack developer will work on the following tasks:

- 1. Full-stack Development:**
 - Develop and maintain both front-end and back-end components of the platform.
 - Implement the backend infrastructure for data management, API development, and ensure smooth operation of the conversational agent and data collection for the data dashboard.
- 2. Collaboration with Cross-functional Teams:**
 - Work closely with AI researchers, clinicians, nurses, and designers to integrate their inputs into the development process.
 - Understand and address the clinical and user requirements.
- 3. Generative AI Integration:**
 - Contribute to the development and integration of the Generative AI (LLM-based) Conversational Agent.
- 4. Data Management & Anonymization:**
 - Build and maintain systems that anonymize and manage data collected from user interactions with the conversational agent.

- Develop a secure data pipeline that collects and processes user data and presents it in a clinician-facing dashboard for insights.
5. **Agile & Iterative Development:**
- Use Agile methodologies to ensure iterative progress and continuous feature improvements.
 - Manage development sprints and deliver prototypes regularly to align with both short-term goals and long-term vision.
6. **System Architecture Planning:**
- Define and implement the technical and architectural requirements necessary for project scalability and innovation.
 - Balance the immediate needs of the projects goals, trials and validation with the long-term vision for the platform's evolution.

Administrative

As a Full-stack developer in Adapt, the person will occasionally be required to engage in administrative tasks in support of the PI and Commercial Leads overall activity. This may include drafting sections of reports for funding bodies; organising a programme of suitably themed group meetings and seminars; contributing to research funding proposals; drafting of ethics applications; and other such tasks as they arise.

Person Requirements

We are looking for an experienced fullstack developer capable of working with multidisciplinary team to deliver the technology stack and architecture to deliver the Amethystcare innovation. Candidates with an interest in AI, working with LLMs and/or voice enabled interfaces are particularly encouraged to apply

Qualifications

- A primary degree in a computer science or similar and industrial experience.

Knowledge & Experience (Essential & Desirable)

Essential:

- A minimum of 5 years' experience in a software developer role;
- Experienced in delivering production ready software;
- Experienced with technologies including ReactJS, HTML, CSS, JavaScript, RestAPI;MySQL and Amazon AWS;
- Experienced with Model-View-Controller (MVC) design pattern;
- Experienced in test driven development;
- Continuous delivery and cloud deployment experience.

Desirable:

- **AI/ML Knowledge:** Familiarity with AI, particularly in integrating or working with LLMs and generative models.
- **Voice Assistants:** Experience or familiarity with developing or integrating voice-enabled

interfaces (e.g., Google Assistant, Alexa).

Skills

Essential:

- **Front-end Development:** Strong experience with frameworks like React, Vue, or Angular to build intuitive user interfaces.
- **Back-end Development:** Proficiency in backend frameworks and experience designing RESTful APIs.
- **Database Management:** Experience in database design and management (SQL and NoSQL databases), ensuring data security and scalability.
- **Cloud Services:** Experience with cloud infrastructure (AWS, GCP, Azure) for hosting applications, managing data, and deploying services.
- Ability to work effectively in a cross-disciplinary team with AI researchers, clinicians, and designers.
- Strong communication skills to discuss technical aspects with non-technical stakeholders and users (clinicians, nurses).
- Experience working in Agile environments, contributing to sprint planning, and working in iterations to deliver continuous product improvements.

Desirable

- Knowledge of GDPR and data privacy regulations, especially concerning sensitive health-related data.
- Experience implementing security measures to protect anonymized user data and safeguard the data dashboard for clinical use.
- An understanding of the challenges faced by older adults and the ability to design solutions that are accessible and user-friendly for this demographic.

Benefits

- Competitive salary and equity
- High-end computer and peripherals
- Dedicated desk in shared office space, with generous social spaces
- A creative and enabling environment with impactful research
- Pension and social insurance (PRSI) included
- Trinity Day Nursery
- Travel Pass Scheme
- Bike to Work Scheme
- Employee Assistance Programme
- Sports Facilities
- 22 days of Annual Leave
- Paid Sick Leave

- Training & Development
- Staff Discounts locally

Application Procedure

Applicants should provide the following information when applying:

1. A motivation statement outlining their interest and suitability for the position.
2. A comprehensive curriculum vitae
3. The names and contact details (e-mail) of three referees.

Note:

Candidates who do not address the application requirements above will not be considered for interview.

Further Information

Informal enquiries about this post should be made to Conor McNally (conor.mcnally@tcd.ie).

Snapshot of the Faculty

The Faculty of Science, Technology, Engineering and Mathematics is located at the east end of the Trinity campus. It brings together eight schools that deliver discipline-specific research and training (**Biochemistry & Immunology, Chemistry, Computer Science and Statistics, Engineering, Genetics & Microbiology, Mathematics, Natural Sciences, Physics**). Each School produces graduates that are leaders, innovators and doers in STEM education and research, in Ireland and beyond.

As well as these eight schools, the Faculty is made up of three Trinity College Research Institutes, five National Research Centres and three Units. Together these represent approximately 30% of the staff in the College.

Researchers in the Faculty address challenges that are complex and multi-faceted. They do this by continuously asking the fundamental questions of how? and why? They seek out answers to current and future challenges in climate change, food and water security, sustainable urbanisation, personal privacy, healthy ageing and eradicating infectious diseases. They lead innovations at the frontiers of science and technology often in high-level multi-disciplinary teams based within the Schools, Research Institutes and Centres.

The three Trinity Research Institutes are:

- **CRANN** - The Centre for Research on Adaptive Nanostructures and Nanodevices
- **TBSI** - Trinity Biomedical Sciences Institute
- **TCIN** - Trinity College Institute of Neuroscience

The four National Research Centres are:

- **ADAPT** - The SFI Centre for digital content and media innovation
- **AMBER** - The SFI Centre for Advanced Materials and BioEngineering Research
- **CONNECT** - The SFI Centre for digital content and media innovation
- **ENABLE** - Connecting communities with smart urban environments through the Internet of Things

The three units that support our teaching and learning mission are:

- **Biology Teaching Centre** - responsible for the coordination of all Biology teaching to Junior and Senior Freshman students in Science, as well as providing service teaching to other groups within the College.
- **Comparative Medicine Unit** - aims to advance knowledge and improve the health and wellbeing of humans and animals by servicing, and providing, world-class facilities and infrastructures, to the Trinity research community.
- **Science Course Office** - responsible for facilitating the Junior and Senior Fresh undergraduate Science Programmes.



Trinity College Dublin, the University of Dublin

Trinity College Dublin, the University of Dublin is Ireland's leading university, one of the top ranked universities in Europe and a member of the League of European Research Universities. It is currently ranked 98th in the QS World University Rankings 2023. Founded in 1592, the University is steeped in history with a reputation for excellence in education, research, and innovation.

Located on an iconic campus in the heart of Dublin's city centre, Trinity has 18,000 undergraduate and postgraduate students across our three faculties – Arts, Humanities, and Social Sciences; Science, Technology, Engineering and Mathematics; and Health Sciences.

The pursuit of excellence through research and scholarship is at the heart of a Trinity education, and our researchers have an outstanding publication record and strong record of grant success. Our research charter outlines the principles that are central to our research vision:

www.tcd.ie/research/about/charter

Trinity has developed **19 broad-based multidisciplinary research themes** that cut across disciplines and facilitate world-leading research and collaboration within the University and with colleagues around the world. Trinity is also home to five leading flagship research institutes:

- n Trinity Biomedical Sciences Institute (TBSI)
- n Trinity College Institute of Neuroscience (TCIN)
- n Trinity Translational Medical Institute (TTMI)
- n Trinity Long Room Hub Arts and Humanities Research Institute (TLRH)
- n Centre for Research on Adaptive Nanostructures and Nanodevices (CRANN)

Trinity is the top-ranked European university for producing entrepreneurs for the past seven successive years and Europe's only representative in the world's top-50 universities (Pitchbook Universities Report 2021).



Trinity has been incorporating sustainability right across the university. Commitments to sustainability have been made in the Strategic Plan (2020 – 2025) and via Trinity’s environmental sustainability practices under nine goals in areas that range from biodiversity to sustainable transport and green procurement.

For more on these sustainability commitments, please visit www.tcd.ie/provost/sustainability/initiatives

Trinity is home to the famous Old Library and to the historic Book of Kells as well as other internationally significant holdings in manuscripts, maps, and early printed material. The Trinity Library is a legal deposit library, granting the University the right to claim a copy of every book published in Ireland and the UK. At present, the Library’s holdings span approximately 7 million printed items, 500,000 e-books and 150,000 e-journals.

With over 130,000 alumni, Trinity’s tradition of independent intellectual inquiry has produced some of the world’s finest, most original minds including the writers Oscar Wilde and Samuel Beckett (Nobel laureates), the mathematician William Rowan Hamilton and the physicist, Ernest Walton (Nobel laureate), the political thinker Edmund Burke, and the former President of Ireland Mary Robinson. This tradition finds expression today in a campus culture of scholarship, innovation, creativity, entrepreneurship, and dedication to societal reform.

Rankings

Trinity is the top ranked university in Ireland and ranked 98th in the world (QS World University Rankings 2023). Trinity ranks in the top 50 in the world on 4 subjects and in the top 100 in 17 subjects (QS World University Rankings by Subject 2021).

Full details are available at: www.tcd.ie/research/about/rankings